CLAIMS:

1. A device (20) for determining the position of an object (8) in a space (10) defined by surfaces (11, 12), the device being arranged for cooperating with an acoustic transducer unit so as to detect acoustic signals transmitted between the object and the transducer unit including their reflections, and for deducing the position of the object from the detected acoustic signals and their reflections,

- wherein the acoustic transducer unit comprises at least a first transducer (1) and a second transducer (2) arranged at a mutual spacing (D), and

- wherein the device (20) is further arranged for determining the times of arrival of the detected acoustic signals and their reflections, and for associating reflections with surfaces (11, 12) on the basis of the order of the times of arrival of the reflections and the correspondence of said times of arrival with the respective transducers (1, 2) so as to derive position information from said order.

2. The device according to claim 1, further arranged for detecting any reversal in the times of arrival of the reflections.

3. The device according to claim 1, 2 or 3, further arranged for comparing the order in which reflections of an acoustic signal are detected with the order in which the associated acoustic signal is detected.

4. The device according to claim 1, 2 or 3, further arranged for determining the order in which the acoustic signals are detected.

5. The device according to any of the preceding claims, further arranged for matching the detected acoustic signals with predetermined templates.

6. The device according to any of the preceding claims, wherein the transducers (1, 2) are arranged for detecting acoustic signals.

7. The device according to any of the preceding claims, wherein the transducers (1, 2) are arranged for producing acoustic signals.

8. The device according to any of the preceding claims, wherein the acoustic signals are ultrasonic signals.

9. The device according to any of the preceding claims, wherein the transducer unit comprises at least three transducers (1, 2, 3) arranged in a two-dimensional pattern so as to obtain three-dimensional position information.

10. The device according to any of the preceding claims, further arranged for determining the times of arrival (t_1, t_2, t_3, t_4, ...) of the acoustic signals and their reflections relative to the time of transmission of those signals.

11. A system for determining the position of an object in a space defined by surfaces (11, 12), the system comprising a first transducer (1), a second transducer (2) and a device (20) according to any of claims 1 to 9.

12. A method of determining the position of an object (8) in a space (10) defined by surfaces (11, 12) using an acoustic transducer unit, the method comprising the steps of detecting acoustic signals transmitted between the object and the transducer unit including their reflections, and deducing the position of the object from the detected acoustic signals and their reflections,

- wherein the acoustic transducer unit comprises at least a first transducer (1) and a second transducer (2) arranged at a mutual spacing (D), and
- wherein the times of arrival of the detected acoustic signals and their reflections are determined, and reflections are associated with surfaces (11, 12) on the basis of the order of the times of arrival of the reflections and the correspondence of said times of arrival with the respective transducers (1, 2) so as to derive position information from said order.

13. The method according to claim 12, further comprising the step of detecting any reversal in the times of arrival of the reflections.

14. The method according to claim 12 or 13, further comprising the step of comparing the order in which reflections of an acoustic signal are detected with the order in which the associated acoustic signal is detected.

15. The method according to claim 12 or 13, further comprising the step of determining the order in which the acoustic signals are detected.

16. The method according to any of claims 12 -15, further comprising the step of matching the detected acoustic signals with predetermined templates.

17. The method according to any of claims 12 -16, wherein the transducers (1, 2) are arranged for detecting acoustic signals.

18. The method according to any of claims 12 – 17, wherein the transducers (1, 2) are arranged for producing acoustic signals.

19. The method according to any of claims 12 -18, wherein the acoustic signals are ultrasonic signals.

20. The method according to any of claims 12 -19, wherein the transducer unit comprises at least three transducers (1, 2, 3) arranged in a two-dimensional pattern so as to obtain three-dimensional position information.

21. The method according to any of claims 12 - 20, further comprising the step of determining the times of arrival (t_1, t_2, t_3, t_4, ...) of the acoustic signals and their reflections relative to the time of transmission of those signals.

22. A computer program product for carrying out the method according to any of claims 12 - 20.